DOCUMENT RESUME

ED 109 814 EA 007 402

TITLE Illinois Public School Fall Enrollment Projections 1974 to 1985.

INSTITUTION Illinois State Office of the Superintendent of Public Instruction, Springfield. Dept. of Research, Statistics, and Evaluation.

PUB DATE Jun 74
NOTE 35p.

EDRS PRICE MF-$0.76 HC-$1.95 PLUS POSTAGE
DESCRIPTORS Birth Rate; Elementary Secondary Education; *Enrollment Projections; *Enrollment Trends; Models; Population Trends; School Statistics; *Statistical Analysis; *Student Enrollment; *Tables (Data)
IDENTIFIERS *Illinois

ABSTRACT

This paper examines the decline in Illinois public school enrollment that began in 1971-72 and attempts to predict the likely duration and severity of the decline. Much of the paper discusses the use of two different models for calculating enrollment projections from 1974 through 1985. The grade-by-grade model formulates enrollment projections separately for each grade level and then combines those results to project total elementary, total secondary, and total enrollment figures. The aggregate model projects total K-12 enrollment directly from the number of live births for the previous 5 to 17 years. The grade-by-grade projection was calculated assuming a birthrate of 2.1, while the aggregate projection was carried out twice, assuming birthrates of 2.1 and 1.8 respectively. Although results of the three projections differ slightly, they all agree that the enrollment decline in Illinois public schools will continue uninterrupted at least through the fall of 1983, and that enrollment in the fall of 1983 will be at least 16 percent lower than the record high enrollment of 1971. (JG)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED109814

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Illinois Public School Fall Enrollment Projections 1974 to 1985

Prepared by
Department of Research,
Statistics and Evaluation

Office of the Superintendent
of Public Instruction
Michael J. Bakalis
Superintendent

June 1974

EA 007 402

PAST AND PRESENT ENROLLMENT

Between the end of World War II and 1971 public school enrollment in Illinois increased each year, reaching a peak of 2,373,659 [1/] in 1971. The 1971 enrollment represents a 113 percent increase over the 1945 enrollment of 1,115,707.

For two consecutive years, 1972 and 1973, the fall enrollment in Illinois public schools has declined. Kindergarten through twelfth grade enrollment fell 26,138 between the fall of 1971 and 1972, and decreased another 35,724 between the fall of 1972 and the fall of 1973. These enrollments for 1972 (2,347,521) and 1973 (2,311,797) represent 1.1 percent and 2.6 percent declines, respectively, from 1971 enrollment, or a total of 61,862 fewer pupils.

The present decline in Illinois Public School enrollment, following as it does 27 years of increases, raises the following important questions:

(1) What are the reasons behind this recent decline in Illinois Public School enrollment?

[1/] The 1971-72 enrollment is taken from the 1971-72 Illinois Public School Fall Enrollment and Teacher Statistics publication. There were also 6,206 pre-kindergarten pupils and 117 secondary post graduates who are not included in the 2,373,659 enrollment figure. The only available 1945-46 Illinois Public School enrollment is an end of the year enrollment taken from the 46th Biennial Report of the Superintendent of Public Instruction. The 1,115,707 is a "net" enrollment because the end of the year "total" enrollment for 1945-46 included duplicate counts of 43,457 inter-district transfer students.

(2) How long will this enrollment decline continue?

(3) How great is the decline likely to be?

(4) What are some of the likely effects of this decline?

The purpose of this report is to provide answers to the first three of the four questions. The latter question will be the topic of a separate research report to be completed in the future.

Causes of Present Enrollment Decline

Two factors have exerted a major influence upon the recent decline in Illinois Public School enrollment. They are the marked decline in the number of Illinois resident live births and the slight out-of-state net migration of Illinois population.

The basic reason for the decline in overall enrollment is the general decline in the annual number of Illinois live births during the 1960s and early 1970s. Table I shows the changes in the annual number of Illinois resident live births. The crucial year displayed in this table is 1959 when the number of Illinois live births reached a record high of 239,871. The 1959 peak was the culmination of consistent annual increases since World War II. After 1959 a reverse trend in the annual number of Illinois live births began and has continued through 1973. There have been consistent annual reductions in the number of Illinois live births since 1959,

TABLE I

ANNUAL NUMBER OF ILLINOIS LIVE BIRTHS 1/

YEAR	NUMBER OF LIVE BIRTHS	INDEX OF LIVE BIRTHS (1959=100)
1946	174,825	72.8
1947	196,007	81.7
1948	184,871	77.1
1949	189,313	78.9
1950	189,640	79.1
1951	201,082	83.8
1952	205,438	85.6
1953	206,813	86.2
1954	217,229	90.6
1955	220,541	91.9
1956	229,571	95.7
1957	238,579	99.5
1958	234,712	97.8
1959	239,871	100.0
1960	238,760	99.5
1961	237,051	98.8
1962	230,484	96.1
1963	224.787	93.7
1964	222,259	92.7
1965	208,063	86.6
1966	201,284	83.9
1967	195,644	81.6
1968	193,261	80.6
1969	195,599	81.6
1970	205,203	85.5
1971	195,311	81.4
1972	177,848	74.1
1973	168,992	70.5
PROJECTED LIVE BIRTHS: 2.1 BIRTH RATE 2/		
1974	173,111	72.2
1975	177,901	74.2
1976	185,989	77.5
1977	192,046	80.1
1978	197,747	82.4
1979	202,887	84.6
1980	205,786	85.8
PROJECTED LIVE BIRTHS: 1.8 BIRTH RATE 3/		
1974	163,213	68.0
1975	167,281	69.7
1976	171,308	71 4
1977	175,213	73.0
1978	178,845	74.6
1979	182,163	75.9
1980	184,991	77.1

1/ Annual number of live births provided by Clyde Bridger, Chief Statistician, Illinois Department of Public Health, Education and Information Division. Due to the lack of a final count of 1973 live births, Mr. Bridger estimated that 1973 live births would equal 169,700. This figure was used in the enrollment projections.

2/ Projections provided by Robert Carey, University Bureau of Research, University of Illinois, Urbana, Illinois, April 15, 1974.

3/ Projection prepared by David F. Ellsworth, Statistics Section, Superintendent of Public Instruction, Springfield, Illinois.

with only two years (1969 and 1970) showing exceptions to this downward trend. During this 14 year span there has been a substantial 29.5 percent drop in the number of Illinois live births to a low of 168,992 in 1973.

Since approximately 85 percent of Illinois resident live births enter Illinois Public School Kindergarten five years later, annual changes in the number of live births usually result in a similar change in public school enrollment at the appropriate grade level five to seventeen years later. Generally before a reverse trend in the total enrollment (grades K-12) of Illinois Public Schools appears, the same reverse trend must have first occurred in a majority (7 out of 13) of the individual grade levels. Since a reverse trend in enrollment progresses upward through the grade levels, one grade per year, a reverse trend in total enrollment usually appears in the same year that it reaches the sixth grade. Most of the live births in any given calendar year can be expected to reach the sixth grade of school 12-13 years later. In view of this, there should be a 12-13 year time lag between the 1959 peak year for the number of Illinois live births and the peak year of Illinois Public School enrollment. Also the beginning of the decline (a reverse trend) in the number of Illinois live births should be followed 12-13 years later by the beginning of the decline in total Illinois

Public School enrollment. This expected time lag is verified by the fact that the Illinois Public School fall enrollment (K-12) reached a high of 2,373,659 in the fall of 1971 and began declining in 1972. That is, enrollment peaked in 1971, 12 years after the peak in live births (1959).

Information provided by the Illinois Department of Public Health indicates that from 1960 to 1970, there was a net out-of-state migration of 28,117 persons, or less than 0.3 percent of the total Illinois population.[2/] When converted to an average annual basis, this net out-of-state migration is insignificantly small. For practical purposes, therefore, the decade of the 1960s can be viewed as a period of zero net migration for the State of Illinois as a whole.

Since corresponding migration information is not yet available for the 1970s, extensive discussions were conducted with five key research personnel in the Illinois Department of Public Health, the U.S. Bureau of the Census, and the Chicago Board of Education to obtain estimates of Illinois in and out-of-state migration trends from 1970 through 1973. There was general agreement among all five researchers representing these three agencies that a slight out-of-state net migration has occurred during this

---

2/ Clyde Bridger, Components of Illinois Net Migration: 1960-1970, Unpublished Report, (Illinois Department of Public Health).

period. While precise data is not presently available, it was estimated that the extent of this out-of-state net migration for Illinois school age population from 1970 through 1973 is probably 1 to 2 percent, which would average about 0.3 to 0.7 percent on an annual basis. This estimate is consistent with the fact that the 1972 and 1973 enrollments are slightly less than what had been previously projected utilizing 1962-1970 fall enrollment information, which reflected an era of near zero net migration. While the degree of out-of-state migration from 1970 through 1973 is indeed small, it nevertheless appears to have contributed to the 1972 and 1973 Illinois Public School fall enrollment decline.

Consideration was also given to the possibility that public school enrollment is declining due to pupil transfers to non-public schools. Although this may have an impact upon enrollment in any given school district, the transfer of pupils from public to non-public school does not explain the statewide decline in public enrollment. The percentage of Illinois school age children in non-public schools continues to decline, and was equal to nearly 14 percent in the fall of 1973.

ENROLLMENT PROJECTIONS

A variety of approaches may be used to project public school enrollment. The most common approach uses a grade-by-grade cohort survival ratio. A second approach projects enrollment based on an aggregate cohort survival ratio.[3/] These are the approaches utilized to project enrollment in this paper.

Limitations of Projections

Whether arriving at an enrollment projection utilizing the grade-by-grade approach or the aggregate enrollment approach, the procedure is much the same. Relationships between enrollment for a specified time period and live births for a related time period are sought. It is assumed that enrollment is some function of live births for a related time period. Cohort survival may be related to live births to project enrollment or live births associated directly with enrollment. Although cohort survival ratios are rather unpredictable, there is a stronger relationship between the cohort survival-live birth model and enrollment than is true of the direct relationship between live births and enrollment. Therefore, the present discussion utilizes the former approach.

3/ The cohort survival ratio is defined as the relationship between enrollment for a specified time period and the number of live births for a related time period. For example, the cohort survival ratio for kindergarten enrollment in time period t is defined as the number of kindergarten pupils enrolled in time period t divided by the sum of live births in time period t-5. The time lag between enrollment and live births is based upon the assumption that kindergarten pupils in time period t were born five years earlier (i.e., t-5).

Regardless of the approach, those that attempt to forecast future enrollment based upon past trends face the same problems. There is a great deal of variation in cohort survival ratios from year to year. This is particularly true for the relationship between live births and kindergarten and/or first grade enrollment. When moving from first to second grade, there is a shorter time lapse and, thus, less time for exogenous factors to enter into the determination of the ratio than when one associates births five or six years earlier with kindergarten or first grade enrollment.

A second problem that is encountered is that the projector must assume constant socio-economic, institutional-legal, and demographic conditions. Socio-economic conditions which must be considered are the conditons of war and peace, the state of the economy, and rates of migration. Institutional-legal arrangements include: the accessibility of birth limitation measures, of credit and housing, of public assistance, and the availability of educational programs. Demographic factors include the composition of the population by sex, race, and age. A change in any of these factors may impact actual versus projected enrollment.

A third problem for those attempting to project enrollment, which may or may not be directly related to those above, is that values and attitudes concerning family size must be assumed relatively constant for the period upon which the projections are based and into the future.

It is extremely difficult to find a period in recent Illinois (or U. S.) history when these factors can be held constant. For example, in recent history the following events have occurred which would be hypothesized to have a negative impact upon live births, and thus enrollment:

(1) From 1964 to 1968, U. S. involvement in the war in South East Asia occurred;

(2) Since 1965, prices have risen by nearly 50 percent and the prime rate of interest increased from 4.8 to 11.0 percent;

(3) In the 1960s contraception practice was revolutionized. Since the early 1960s, federal financial support for family planning has increased from near zero to $128 million for fiscal 1973. Federal support for research rose from zero to $40 million for the same fiscal year;

(4) Beginning in 1965, state level legal barriers which prevented the dissemination of contraception information began to fall. Laws authorizing and encouraging public health department or welfare agencies to provide family planning services at public expense were passed in a number of states, including Illinois. In January, 1972, the U. S. Supreme Court ruled that states could not interfere with decisions made by a woman and her physician during the first three months of pregnancy;

(5) During the 1970s, as was stated earlier, the net migration rate changed from near zero to a deficit migration, which may in turn be due to relatively less attractive employment opportunities or public assistance benefits in Illinois;

(6) There has been a change in values and attitudes during the last decade which is characterized by the fact that couples are marrying at a later age and planning to have fewer children than in the recent past;[4/]

(7) The period since 1963 has been characterized as politically tumultuous, with the assassination of prominent political figures, race and campus riots ending in violence, and the decline of some basic political institutions;

(8) There has been an increased awareness of the environmental crisis.

Two factors which can be assumed to have had the impact of increasing public school enrollment are:

(1) In 1970, local school districts were mandated to make available a kindergarten program to those parents who desired their children to attend. The law, however, did not make attendance compulsory;

4/ U. S. Bureau of the Census, Current Population Reports, Series p-25, No. 493, "Projection's of the Population of the United States, by Age and Sex: 1972 to 2020" U. S. Government Printing Office, Washington, D. C. 1972.

(2) The decline in the number of non-public schools has made access to schools other than public schools more difficult.

Should these conditions continue to exist (or accelerate), present rates of decline could continue (or accelerate). The important point is that enrollment projections, especially those based upon projecting yet unborn children, are subject to many factors beyond our control (i.e., exogenous factors). Therefore, they must be viewed as the best estimates under foreseeable circumstances. The further into the future the projections, the greater the probability for error.

A last note of caution. These enrollment projections reflect national and state-wide conditions. To the extent that local institutional and socio-economic conditions vary from these trends, the projected state-wide enrollment trends will vary from the enrollment trends for a given school district. Therefore, caution must be observed in extending the state-wide trends to any given district.

The Grade-by-Grade Approach

The Illinois Public School Fall Enrollment projections are based upon a trend analysis of past enrollments collected by the annual

Public District Fall Enrollment and Housing Report.[5/] The fall enrollments for the years 1963 through 1973 are shown on Table II. Enrollment projections were first formulated for each grade level separately and then summed across grades to obtain a total elementary (grades K-8), total secondary (grades 9-12), and a total enrollment (K-12). These grade level projections and the methods, assumptions, and limitations upon which they are based are presented in Technical Report: Illinois Public School Fall Enrollment Projections, 1974-1985, Grade-by-Grade Model. It should be stated at this point, however, that while the projections of kindergarten and first grade enrollment, which are based upon the number of Illinois live births five and six years earlier, do contain adjustments for the recent (1970-73) slight state-wide net out migration, the projections for all other grade levels assume a return of the near zero net migration conditions which prevailed during the decade of the 1960s.

Total Projected Elementary Enrollment: Grades K-8

Table III shows past Illinois Public School elementary (K-8) enrollment from 1970 through 1973 and the projected enrollment from the fall of 1974 through the fall of 1985. The total elementary enrollment reached its highest level of 1,684,132 pupils in the fall of 1970. Since 1970 the elementary

---

5/ The Public District Fall Enrollment and Housing Report is distributed annually to and completed by every Illinois public school district. From 1962 through 1970 school districts reported their student enrollment as of the 6th day of school. Beginning in 1971 school districts have reported their student enrollment as of the last school day of September.

TABLE II

ILLINOIS PUBLIC SCHOOL FALL ENROLLMENT: 1963 THROUGH 1973

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
Nursery	-----	-----	-----	844	768	731	1,453	3,803	6,206	6,935	8,756
Kindergarten	155,306	161,618	167,417	174,663	173,862	174,709	178,031	181,111	174,348	165,220	161,101
1st Grade	184,610	185,847	189,249	191,565	194,158	191,918	189,911	186,776	174,884	163,894	156,105
2nd Grade	173,694	176,623	178,617	182,678	186,008	187,874	186,117	183,338	179,197	166,581	156,128
3rd Grade	165,933	170,870	177,130	184,094	194,312	198,372	193,720	194,306	189,479	181,640	168,591
4th Grade	144,979	153,610	160,108	171,299	173,243	180,742	184,110	186,110	181,434	177,294	173,078
5th Grade	151,595	158,141	162,423	161,570	173,124	176,397	182,456	184,596	184,974	178,716	175,657
6th Grade	160,171	151,441	157,632	163,336	163,746	174,032	175,669	182,979	183,939	182,688	178,039
7th Grade	134,348	149,930	152,276	159,264	164,999	165,915	175,819	177,493	183,210	182,049	183,142
8th Grade	136,508	144,872	147,813	150,974	158,275	163,867	164,475	173,438	176,392	178,930	180,428
Elem. Uncl.	14,807	19,075	18,645	22,568	23,874	25,506	30,528	33,985	----	----	----
Elem. Sp. Ed.	----	----	----	----	----	----	----	----	38,541	42,473	43,927
Elem. Ungrad.	----	----	----	----	----	----	----	----	12,119	24,001	24,290
TOTAL ELEM.	1,421,951	1,472,027	1,511,310	1,562,855	1,606,369	1,640,063	1,668,269	1,687,935	1,684,723	1,650,421	1,609,242
9th Grade	159,536	151,440	159,572	164,486	167,564	174,779	181,162	182,580	191,655	193,205	194,837
10th Grade	143,422	155,569	147,277	156,524	161,267	163,704	170,939	175,945	178,627	184,734	185,395
11th Grade	143,837	132,594	142,264	139,044	147,436	152,881	154,601	160,600	162,982	163,452	169,156
12th Grade	103,522	122,506	119,279	127,113	125,035	132,993	137,304	137,487	143,246	144,254	143,400
Sec. Uncl.	8,345	8,268	8,979	8,694	7,637	8,977	12,192	12,042	----	----	----
Sec. Sp. Ed.	----	----	----	----	----	----	----	----	12,001	13,293	16,273
Sec. Ungrad.	----	----	----	----	----	----	----	----	6,621	5,097	2,250
Post Grad.	51	58	56	64	20	120	49	73	117	73	119
TOTAL SEC.	558,713	570,435	577,427	595,925	608,959	633,454	656,247	668,727	695,259	704,108	711,430
TOTAL ENROLL.	1,980,664	2,042,462	2,088,737	2,158,780	2,215,328	2,273,517	2,324,516	2,356,662	2,379,982	2,354,529	2,320,672

TABLE III

ILLINOIS FALL PUBLIC SCHOOL ELEMENTARY ENROLLMENT PROJECTIONS

Year	Kinder-garten	Grades 1-8	Special Ed.	Total Elem.	Change From Peak Year: Fall 1970	% Change From Fall 1970	Annual % Change From Preceding Year
			PAST ENROLLMENT				
1970	181,111	1,469,036	33,985	1,684,132	-----	-----	-----
1971	174,348	1,465,628	38,541	1,678,517	- 5,615	- 0.3	-0.3
1972	165,220	1,435,793	42,473	1,643,486	- 40,646	- 2.4	-2.1
1973	161,101	1,395,458	43,927	1,600,486	- 83,646	- 5.0	-2.6
			PROJECTED ENROLLMENT				
1974	161,941	1,337,877	47,002	1,546,820	-137,312	- 8.2	-3.4
1975	168,779	1,305,548	49,352	1,523,679	-160,453	- 9.5	-1.5
1976	160,155	1,283,666	51,326	1,495,147	-188,985	-11.2	-1.9
1977	145,835	1,255,332	52,866	1,454,033	-230,099	-13.7	-2.7
1978	139,154	1,214,445	53,923	1,407,522	-276,610	-16.4	-3.2
			PROJECTED ENROLLMENT BASED UPON PROJECTED LIVE BIRTHS*				
1979	142,000	1,184,000	54,000	1,380,000	-304,000	-18.0	-1.9
1980	146,000	1,161,000	54,000	1,361,000	-323,000	-19.2	-1.4
1981	153,000	1,148,000	54,000	1,355,000	-330,000	-19.6	-0.5
1982	158,000	1,142,000	54,000	1,354,000	-330,000	-19.6	0.0
1983	162,000	1,140,000	54,000	1,356,000	-328,000	-19.5	+0.1
1984	166,000	1,133,000	54,000	1,353,000	-331,000	-19.7	-0.2
1985	169,000	1,138,000	54,000	1,361,000	-323,000	-19.2	+0.6

*Beginning in 1979, the projected kindergarten enrollment is based upon projections of Illinois resident live births. For each additional year after 1979, the projected enrollment for each succeeding grade level is also based upon projected Illinois resident live births. The percentage of error in the projected total elementary enrollment beginning with 1979, therefore, will be increasingly greater than for the years 1974 through 1978. Because of this, the projected total elementary enrollment and its corresponding change from 1971, is rounded to the nearest one thousand for the years 1979 through 1985. The calculations presented in the three columns--(1) change from peak year, (2) % change from Fall 1970, and (3) annual % change from the preceding year--were performed before the rounding of the projected total elementary enrollment to the nearest thousand.

enrollment has consistently decreased and a continued annual decline is projected until the fall of 1983.

In the fall of 1982 elementary enrollment is expected to reach its lowest level of approximately 1,354,000 pupils. This represents a reduction of 330,000 pupils or nearly 20 percent from the high in 1970.

The projected elementary enrollment throughout the 1970s will be increasingly influenced each year by live birth projections of children who have not yet been born. 6/ Elementary enrollment projections during the 1980s should be treated with a degree of skepticism. If, for example, the declining trend in Illinois resident live births from 1959 through 1973 is not reversed in 1974 and if a steady moderate upward trend from 1974 onward is not begun, then the decline in elementary public school enrollment will continue beyond 1984-85 school year and exceed the projected reduction of 330,000 (19.6%) from the 1970 peak enrollment year.

Projected Total High School Enrollment: Grades 9-12

The actual Illinois public school enrollments for 1970 through 1973, and the projected enrollments for 1974 through 1985 are presented in Table IV.

6/ Projected live births under alternative birth rate assumption of 2.1 and 1.8 children per woman are presented on Table I, p. 3. The 2.1 rate represents the "replacement level" birth rate felt by demographers to represent the long-range trend since the mid-1960s. The 1.8 rate represents the trend of the past two years.

TABLE IV

ILLINOIS FALL PUBLIC HIGH SCHOOL ENROLLMENT PROJECTIONS

Year	Grades 9-12	Special Ed.	Total Secondary	Change From Peak Year: Fall 1976	% Change From Fall 1976	Annual % Change From Preceding Year
			PAST ENROLLMENT			
1970	656,612	12,042	668,654	-----	-----	-----
1971	683,131	12,001	695,142	-----	-----	+4.0
1972	690,742	13,293	704,035	-----	-----	+1.3
1973	695,038	16,273	711,311	-----	-----	+1.0
			PROJECTED ENROLLMENT			
1974	716,793	16,500	733,293	-----	-----	+3.1
1975	732,431	16,750	749,181	-----	-----	+2.2
1976	738,788	17,000	755,788	-----	-----	+0.9
1977	738,007	17,250	755,257	- 531	- 0.1	-0.1
1978	732,413	17,500	749,913	- 5,875	- 0.8	-0.7
1979	707,752	17,250	725,002	- 30,786	- 4.1	-3.3
1980	680,856	17,000	697,856	- 57,932	- 7.7	-3.7
1981	651,348	16,750	668,098	- 87,690	-11.6	-4.3
1982	623,167	16,500	639,667	-116,121	-15.4	-4.3
1983	613,691	16,250	629,941	-125,847	-16.7	-1.5
1984	617,804	16,250	634,054	-121,734	-16.1	-0.7
1985	617,979	16,250	634,229	-121,559	-16.1	0.0

In contrast with the currently declining elementary enrollment the state-wide high school enrollment is expected to continue increasing through the fall of 1976. Beginning the fall of 1977, the total high school enrollment will decline, the decreases extending beyond 1985. By the fall of 1985, a reduction of 122,000 from the 1976 projected peak enrollment of 756,000 is anticipated. This represents approximately a 16 percent decline in high school enrollment during the eight year period from 1976 to 1985. Based upon the number of children already born,it is projected that by the fall of 1987 total high school enrollment will approximate 596,000, a decrease of 160,000 (21.2%) from the 1976 peak.

If, in 1974, the number of Illinois live births begins a steady annual increase, the high school enrollment will increase during the 1990s. If, however, the number of Illinois resident live births continues to decline for the next few years, before starting to increase, the high school enrollment will continue to decrease into the mid-1990s.

Projected Total Enrollment: Grades K-12

Illinois Public School total enrollment for the year 1970 through 1973, and the projected enrollment for 1974 through 1985, are presented in Table V. Public school total enrollment reached a record high of 2,373,659 in the fall of 1971, declined 1.1 percent in 1972, and is expected to continue decreasing through the fall of 1983. This reduction is expected to approximate 388,000,

TABLE V

ILLINOIS FALL PUBLIC SCHOOL TOTAL ENROLLMENT PROJECTIONS

Year	Total Enrollment	Change From Peak Year: Fall 1971	% Change From Fall 1971	Annual % Change From Preceding Year
		PAST ENROLLMENT		
1970	2,352,786	------	------	------
1971	2,373,659	------	------	+0.9
1972	2,347,521	- 26,138	- 1.1	-1.1
1973	2,311,797	- 62,362	- 2.6	-1.5
		PROJECTED ENROLLMENT		
1974	2,280,113	- 93,546	- 3.9	-1.4
1975	2,272,860	-100,799	- 4.2	-0.3
1976	2,250,935	-122,724	- 5.2	-1.0
1977	2,209,290	-164,369	- 6.9	-1.9
1978	2,157,435	-216,224	- 9.1	-2.3
		PROJECTED ENROLLMENT BASED ON PROJECTED LIVE BIRTHS*		
1979	2,105,000	-268,000	-11.3	-2.4
1980	2,059,000	-315,000	-13.3	-2.2
1981	2,023,000	-351,000	-14.8	-1.8
1982	1,994,000	-380,000	-16.0	-1.4
1983	1,986,000	-388,000	-16.3	-0.4
1984	1,988,000	-386,000	-16.3	+0.1
1985	1,996,000	-378,000	-15.9	+0.4

*Beginning in 1979, the projected kindergarten enrollment is based upon projections of Illinois resident live births. For each additional year after 1979, the projected enrollment for each succeeding grade level is also based upon projected Illinois resident live births. The percentage of error in the projected total enrollment beginning with 1979, therefore, will be increasingly greater than for the years 1974 through 1978. Because of this, the projected total enrollment and its corresponding change from 1971 is rounded to the nearest one thousand for the years 1979 through 1985. The calculations presented in the three columns-- (1) change from peak year, (2) % change from Fall 1971, and (3) annual % change from the preceding year--were performed before the rounding of the projected total enrollment to the nearest thousand.

representing about a 16.3 percent decrease in total enrollment during this twelve year span between 1971 and 1983. Enrollment is projected to increase slightly in the fall of 1984, and again in 1985, if the number of Illinois live births begins an upward trend in 1974.

The Aggregate Approach

Projections of enrollment by grade require an involved procedure and include many intermediate steps. For some purposes a projection of total enrollment may be adequate. As the procedure for the aggregate approach is less involved, a greater range of assumptions may be investigated. To illustrate, enrollment is projected using the assumption of a completed cohort fertility rate of 2.1 children per woman (as used in the grade-by-grade approach) and a lower rate of 1.8 children per woman. The 1.8 rate is presented because it reflects recent trends which may continue in the future.[7/]

The Model

The aggregate model is based upon an assumed relationship between enrollment in grades K-12 in time period t and the sum of live births between the time period t-17 and t-5 where t is the year for which enrollment is being projected.

7/ Schmeck Jr., Harold M., "Birth, Fertility Rates at a New Low in U.S." New York Times, p. 1, April 16, 1974.

A variety of models were tested. They were:

(1) The product of the average of the cohort survival ratios for a specified period times the sum of the number of live births for a related time period;

(2) The product of a regression model projection of the cohort survival ratio for a specified time period and the sum of the live births for a related period; and

(3) A projection based upon a least squares regression equation relating enrollment and live births where enrollment is the dependent variable (Y) and live births is the is the independent variable (X). 8/

The following criteria were used to select which model should be utilized to project enrollment; (a) assuming zero net migration a decrease in live births cannot be associated with an enrollment increase or enrollment cannot decrease by an amount greater than the decrease in live births for the related period; (b) the potential error in the projection estimate; (c) the correlation coefficient, and (d) the probability of the occurrence of the projected outcome, which is related to the need to have consistent quality of data and consistent or balancing socio-economic and institutional changes.

8/ For greater detail refer to Technical Report: Illinois Public School Fall Enrollment Projections, 1974 to 1985, Aggregate Model, Superintendent of Public Instruction, Department of Research, Evaluation and Statistics, June 1974.

Using the above criteria, enrollment was projected by multiplying the average of the cohort survival ratios from 1969 to 1973 times the number of live births from t-17 to t-5. By including years in which out-migration has occurred in Illinois (1972 and 1973), there is an implicit weighting given to allow for the continuation of this pattern.

Projecting enrollment from 1979 to 1985 requires projecting live births from 1974 to 1980. One set of projections was selected from information provided by the University Bureau of Research, University of Illinois. The model assumed a birth rate of 2.1 children per woman of child bearing age. Live births from 1974 to 1980 were also projected based upon an assumption of 1.8 children per woman. Ultimate age-specific birth rates utilized by the U.S. Bureau of the Census in their Series F population projections were applied to the cohort group of women between the ages of 14 and 49, [9] determined by the 1970 Census of Illinois. [10] The projection of live births assumes zero mortality rates and zero net-migration. [11]

---

[9] See U.S. Bureau of Census, Current Population Reports, Series P-25, No. 493, "Projections of the Population of the United States, by Age and Sex: 1972 to 2020," U.S. Government Printing Office, Washington, D.C., 1972, Table A-2, p. 22.

[10] General Population Characteristics: Illinois' 1970 Census of Population U.S. Bureau of Census, Washington, D.C., October 1971, Table 19. Single Years of Age by Race and Sex, 1970, p. 15-91.

[11] Mortality rates for the ages of the cohort groups considered are so low (less than 0.3 of one percent) as to allow an assumption of zero mortality. More crucial is the question of migration. As was stated earlier, recent indications are that immigration has declined while emigration was held constant giving Illinois a net out-migration. As there is no research which allows this consideration to be applied to the 1970 census data, zero net migration is assumed. It is, therefore, recognized that recent emigrants were in the women cohorts considered, and/or they are included in any future out-migration trend, the projections of live births could be high. All other things equal, a high projection of live birth would inflate enrollment projections.

Projection Results: Grades K-12

The K-12 enrollment projections based upon the Aggregate Model are presented in Table VI.

The Aggregate Model projects a state-wide enrollment decline of roughly 31,000 in the fall of 1974 from the 1973 enrollment of 2,311,797. The projected 1974 enrollment represents a decline of nearly 94,000 from the fall 1971 high of 2,373,659, or a decline of 3.9 percent.

The projected 1974 enrollment decline is about 5,000 less than the decline registered between the fall of 1972 and 1973. The rate of decline in enrollment is expected to decrease in the fall of 1975 (29,000) and 1976 (23,000).

The substantial decrease between the fall of 1976 and 1977, reflects the increasing impact of live birth rates since 1965. In 1965 Illinois live births dropped below 210,000 for the first time since 1954. Enrollment projections for 1977 are also based upon Kindergarten children born in 1972, when live births dipped to 177,848, the lowest since 1946 when the post-war "baby boom" was under way. Substantial decreases in live births continued through 1973.

The rate and, ultimately, the direction of change projected between the fall of 1979 and the fall of 1985 will depend upon the assumption accepted as to future birth rates. Do the dramatic declines in live births occuring in 1972 and 1973 represent short-term aberations whose end will be reflected by a

TABLE VI

K-12 ENROLLMENT PROJECTIONS, AGGREGATE MODEL, 1974 THROUGH 1985 1/

YEAR (FALL OF)	ENROLLMENT	CHANGE FROM FALL 1971 PEAK 2/	% CHANGE FROM FALL 1971	% CHANGE FROM PRECEDING YEAR
	BASED UPON ALREADY BORN CHILDREN			
1974	2,281,000	- 93,000	- 3.9%	-1.3%
1975	2,252,000	-122,000	- 5.1	-1.3
1976	2,229,000	-145,000	- 6.1	-1.0
1977	2,179,000	-195,000	- 8.2	-2.3
1978	2,104,000	-270,000	-11.4	-3.5
	BASED UPON PROJECTED LIVE BIRTHS, ASSUMING 2.1 BIRTHS PER WOMAN			
1979	2,073,000	-301,000	-12.7%	-1.5%
1980	2,031,000	-343,000	-14.5	-2.0
1981	2,001,000	-373,000	-15.7	-1.5
1982	1,977,000	-397,000	-16.7	-1.2
1983	1,969,000	-405,000	-17.1	-0.4
1984	1,971,000	-403,000	-17.0	+0.1
1985	1,979,000	-395,000	-16.6	+0.4
	BASED UPON PROJECTED LIVE BIRTHS, ASSUMING 1.8 BIRTHS PER WOMAN			
1979	2,065,000	-309,000	-13.0%	-1.9%
1980	2,015,000	-359,000	-15.1	-2.4
1981	1,972,000	-402,000	-16.9	-2.1
1982	1,935,000	-439,000	-18.5	-1.9
1983	1,912,000	-462,000	-19.5	-1.2
1984	1,897,000	-477,000	-20.1	-0.8
1985	1,889,000	-485,000	-20.4	-0.4

1/ All projections and differences are rounded to the nearest thousand.

2/Enrollment in the fall of 1971 was 2,373,659.

substantial increase in live births in 1974? Or, do the birth rates of 1972 and 1973 represent an adjusted long term birth rate brought about by deep seated institutional and socio-economic change?

Should the birth rate return to the replacement level of 2.1 children per woman, enrollment will continue to decrease until the fall of 1983, the rate of decrease declining year-by-year. Enrollment will decrease by 30,000 or more until the fall of 1983. Projected fall 1983 enrollment equals 1,969,000 or 405,000 (17.1%) fewer pupils than during the peak year of 1971. The slight increase of 2,000 pupils between the fall of 1983 and 1984 is followed by a 1985 enrollment of 1,979,000, or an increase of 8,000 (0.4 percent) over the fall of 1984 enrollment. The Aggregate Model, under the cautious assumption of a 2.1 birth rate, projects that enrollment in the fall of 1985 will be 395,000 (16.6%) pupils less than the nearly 2,374,000 public school enrollees during the high year of 1971.

Should the circumstances which have produced recent birth trends continue, enrollment will decrease steadily, even though by 1985 the rate of decrease will slacken. Under the assumption of 1.8 children per woman, it will again be the fall of 1983 before the rate of decrease in enrollment is less than 30,000 per year. Between the fall of 1984 and 1985, enrollment is projected to decrease by 8,000, in contrast to the 8,000 increase of the

2.1 birth rate assumption. The projected 1985 enrollment is 1,889,000. Under the Aggregate Model, assuming a birth rate of 1.8 children per woman, enrollment is projected to decrease by 485,000 (20.4%) between the peak enrollment of the fall of 1971 and the fall of 1985.

BEYOND THE FALL OF 1985

The further into the future that data is stretched, the greater the chance of error. However, some observations may be ventured. Briefly, they are as follows:

(1) Using the assumption of 2.1 children per woman, the grade-by-grade model and the aggregate model both conclude that the downward trend in enrollment will be reversed between the fall of 1983 and 1984. Slight upward trends will follow.

(2) With the assumed birth rate of 1.8, the decline in enrollment continues, but by the fall of 1984 is substantially less than previous years.

These observations would seem to indicate that by the mid-1980s the decline in enrollment will level off and will be followed by slight increases. However, caution is urged in extending the trends of the mid-1980s, for by 1988:

(1) The women born in mid- and late-sixties, years of dramatic decline in live births, will be entering the prime child bearing age. This impact will be greatest during the late 1980s and through the 1990s.

(2) The impact of the above observation upon the number of children born will be determined by the values and attitudes, institutions, and socio-economic conditions which prevail in the late 1980s and 1990s.

SUMMARY

The purpose of this study is to provide 12-year projections of Illinois Public School enrollment to educators, legislators, and interested citizens to assist them in their educational decisions, plans, and actions for the future. During the 27-year period following World War II Illinois Public School enrollment (grades K-12) increased 113 percent reaching a record high of 2,373,659 in the fall of 1971. However, Illinois Public School enrollment declined 1.1 percent in the fall of 1972 and 2.6 percent in the fall of 1973 from the record high enrollment of 1971.

Both the marked increase in enrollments during the decades of the 1950s and the 1960s and the recent decline initiated in the fall of 1972 are direct results of earlier trends in the number of Illinois live births. Following World War II the number of Illinois resident live births consistently increased and reached a record high of 239,871 in 1959. Since 1959, however, the number of live births has steadily declined to a low of 168,992 in 1973. This represents a 29.5 percent decline in live births during the most recent 14 year period (1959-1973).

The enrollments projected in this study are based upon the assumption that the relationships among the conditions which have determined past

enrollments will remain constant in the future.[12/] While this assumption is necessary, discretion should be exercised in utilizing these state-wide enrollment projections for the two following reasons:

(1) In a time of dynamic change, such as the present, the relationships among the conditions affecting enrollment may also change.

(2) The enrollment projections reflect state-wide, not local conditions. To the extent that local institutional and socio-economic conditions differ from state-wide conditions, the projected state-wide enrollment trends will also differ from the enrollment trends of any given school district.

In view of these inherent limitations the projected enrollments should be treated as future approximations and not as exact or precise numbers.

Enrollment projections were formulated for grades K-12 from the fall of 1974 to the fall of 1985 using two models. One model, the grade-by-grade approach, projected enrollment for each grade level separately. The projected enrollments for individual grade levels were then summed to obtain a total elementary, total secondary, and a total enrollment. A second model projected total enrollment (K-12) for a given year from the sum of the live

---

12/ In addition to the number of live births, two other conditions which exert a significant influence upon Illinois Public School enrollment are the public/nonpublic pupil ratio and in-state or out-of-state net migration.

births for the previous 5 to 17 years and is referred to as the aggregate approach. Differences is the projected enrollments of the aggregate model and the grade-by-grade model are due to differences in (1) the models, (2) the assumptions involved, and (3) the years of past enrollment data utilized.

The aggregate model employs two different assumptions as to birth rates, 1.8 and 2.1 children per woman, while the grade-by-grade approach is based upon an assumed 2.1 birth rate. A number of demographers feel that the 2.1 birth rate is the long-run birth rate, and it is referred to as the "replacement-level birth rate". The 1.8 birth rate, on the other hand, most accurately reflects the trends of the past two years.

Table VII and Figure I present the projected total enrollment (K-12) from the fall of 1974 through the fall of 1985. The highlights of these Illinois Public School enrollment projection results are summarized below.

(1) Both models, when employing the 2.1 birth rate assumption, predict continued declines in total enrollment through the fall of 1983. The grade-by-grade model projects total enrollment to drop 16.3 percent from the 1971 record high of 2,373,659 to a low of about 1,986,000. The aggregate model projects a decline of 17.1 percent to a low of approximately 1,969,000 in 1983.

(2) Both models, when employing the 2.1 birth rate assumption, project small increases in total enrollment beginning in 1984 and continuing in 1985.

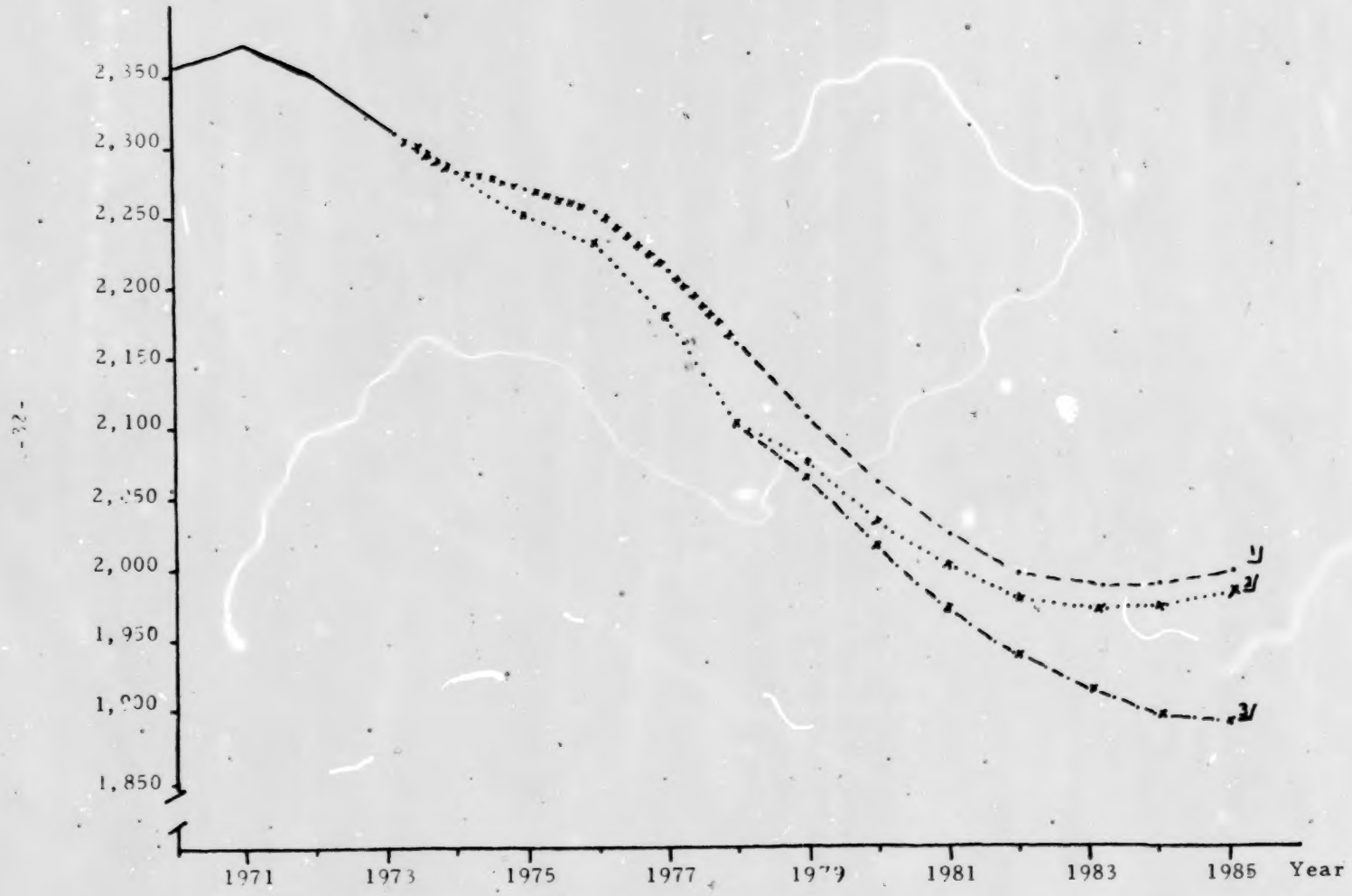
(3) The aggregate model, when employing a 1.8 birth rate assumption, predicts a continued decline in total enrollment through the fall of 1985. The 1985 fall enrollment is projected to reach 1,889,000. This represents a 20.4 percent decline from the fall 1971 peak year enrollment.

The three separate projection results differ slightly as to their predicted rate and extent of decline in Illinois Public School total enrollment. These differences are primarily a result of the two different birth rate assumptions (2.1 vs. 1.8) utilized in the formulation of the enrollment projections. More important than these differences, however, is the fact that all three projection results agree that the decline in Illinois Public School enrollment will continue uninterrupted at least through the fall of 1983. They also agree that by the fall of 1983 a decline of at least 16 percent from the record high enrollment of 1971 will have occurred.

When the 2.1 birth rate assumption is employed by both models, extended projections into the middle and latter 1980s suggest a cessation of the declining trend, followed by a gradual increase in total enrollment.

These extended projections, however, assume that the 14-year declining trend in Illinois live births (1959-1973) will be reversed during 1974 and that a sustained upward trend in Illinois live births will begin in 1974 and continue throughout the remainder of the 1970s. While this assumption is based upon the strong probability that the number of women of child-bearing age will continue to increase throughout the 1970s, counteracting socio-economic conditions are also evident. The escalating inflationary trends of recent years and the social changes in family attitudes, values, and lifestyle appear to be exerting a downward effect upon the annual number of live births. If, therefore, the number of Illinois resident live births does not increase during 1974 and succeeding years, the decline in Illinois Public School total enrollment can be expected to extend into the latter part of the 1980s and exceed 16 percent.

Figure 1. Actual and Projected Enrollment, Fall of 1970 to Fall of 1985



1/ Grade-by-grade model assuming a 2.1 birth rate
2/ Aggregate model assuming a 2.1 birth rate
3/ Aggregate model assuming a 1.8 birth rate

TABLE VII

K-12 Enrollment Projections, Fall of 1974 to Fall of 1985
(rounded to nearest thousand)

YEAR (FALL OF)	GRADE-by-GRADE MODEL (2.1 Birth Rate) 1/		AGGREGATE MODEL (2.1 Birth Rate 1/)		(1.8 Birth Rate 1/)	
	PROJECTED ENROLLMENT	CHANGE FROM 1971-72 PEAK YEAR 2/	PROJECTED ENROLLMENT	CHANGE FROM 1971-72 PEAK YEAR 2/	PROJECTED ENROLLMENT	CHANGE FROM 1971-72 PEAK YEAR 2/
1974	2,280,000	- 94,000	2,281,000	- 93,000	1/	
1975	2,273,000	-101,000	2,252,000	-122,000	1/	
1976	2,251,000	-123,000	2,229,000	-145,000	1/	
1977	2,209,000	-165,000	2,179,000	-195,000	1/	
1978	2,157,000	-217,000	2,104,000	-270,000	1/	
	BASED UPON PROJECTIONS OF LIVE BIRTHS 1/					
1979	2,105,000	-267,000	2,073,000	-301,000	2,065,000	-309,000
1980	2,059,000	-315,000	2,031,000	-343,000	2,015,000	-359,000
1981	2,023,000	-351,000	2,001,000	-373,000	1,972,000	-402,000
1982	1,994,000	-380,000	1,977,000	-397,000	1,935,000	-439,000
1983	1,986,000	-388,000	1,969,000	-405,000	1,912,000	-462,000
1984	1,988,000	-386,000	1,971,000	-403,000	1,897,000	-477,000
1985	1,996,000	-378,000	1,979,000	-395,000	1,889,000	-485,000
	% CHANGE FROM 71-72	ANNUAL RATE OF CHANGE (%)	% CHANGE FROM 71-72	ANNUAL RATE OF CHANGE (%)	% CHANGE FROM 71-72	ANNUAL RATE OF CHANGE (%)
1974	-3.9%	-1.4%	-3.9%	-1.3%	1/	
1975	-4.2	-0.3	-5.1	-1.3	1/	
1976	-5.2	-1.0	-6.1	-1.0	1/	
1977	-6.9	-1.9	-8.2	-2.3	1/	
1978	-9.1	-2.3	-11.4	-3.5	1/	
	BASED UPON PROJECTIONS OF LIVE BIRTHS 1/					
1979	-11.3%	-2.4%	-12.7%	-1.5%	-13.0%	-1.9%
1980	-13.3	-2.2	-14.5	-2.0	-15.1	-2.4
1981	-14.8	-1.8	-15.7	-1.5	-16.9	-2.1
1982	-16.0	-1.4	-16.7	-1.2	-18.5	-1.9
1983	-16.3	-0.4	-17.1	-0.4	-19.5	-1.2
1984	-16.3	0.1	-17.0	0.1	-20.1	-0.8
1985	-15.9	0.4	-16.6	0.4	-20.4	-0.4

1/ Children born in 1974 will not enter Kindergarten until 1979, therefore the alternative assumptions concerning live birth rates have no impact upon enrollment until 1979.

2/ Enrollment in the fall of 1971 equalled 2,373,659, which was an increase of 20,873 over 1970 enrollment. In 1972 enrollment dropped 26,138 to 2,347,521 and in the fall of 1973 to 2,311,797 - a decrease of 61,862 from the 1971 peak enrollment year.